

# Acute-Phase Bed-Rest Duration was Associated with Lower Grip Strength in a Post-COVID-19 Cohort

TECHNOLOGY ASSISTED SOLUTIONS FOR THE RECOGNITION OF OBJECTIVE PHYSIOLOGICAL INDICATORS OF POST-COVID-19 FATIGUE

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## INTRODUCTION

Though age-related muscle loss is traditionally associated with older cohorts, strong evidence suggests a life-spanning precipitation of decreased muscle mass and strength beginning as early as the fourth decade of life, with established deleterious consequences for later life morbidity and mortality. Periods of sedentary behaviour and extended bed rest further compound reductions in muscle strength. Our aim was to examine such associations in a post-COVID-19 cohort.

## METHODOLOGY

Participants reporting ongoing symptomatology and fatigue post COVID-19 underwent assessments of grip strength via dynamometry (2 measures each hand) (Figure 1). Demographics of COVID-19 illness, including time since diagnosis, duration of low activity/bed rest (LA/BR) during acute illness, and levels of fatigue were captured via self-reported questionnaires. Independent predictors of mean grip strength were investigated using a linear regression model.



Figure 1. Jamar Plus Digital Hand Dynamometer

## RESULTS

Forty-nine participants underwent assessments (69% female, mean(SD) age 44(12) years). At the time of assessment, days post COVID-19 diagnosis ranged from 39–522 (mean 262(140)). The mean self-reported period of LA/BR during the acute illness was 15(18) days. In general, participants reported significant levels of fatigue (median(IQR) Chalder Fatigue Scale score 22(8)). Mean grip strength was 41.3(6.3) Kg for men and 22.8(6.7) Kg for women (Table 1). When predictors of grip strength were investigated, an increased duration of LA/BR was found to be associated with lower grip strength, independently of age, gender, time since COVID-19 diagnosis, and self-reported fatigue (B = -0.158, 95% CI -0.242 to -0.074, p= 0.001).

## TABLE 1. DEMOGRAPHICS

	Mean (SD) / % of n n = 49
Age (years)	44 (12)
Female sex (% of n)	69%
Days since COVID-19 diagnosis / Positive SARS-CoV-2	262 (140)
Duration of acute COVID-19 (days)	20 (18)
Hospitalized during acute phase of COVID-19 (% of n)	23%
Duration of bedrest or low activity (days)	15 (18)
Mean fatigue score (Chalder Fatigue Scale)	24.0 (5.5)
Average grip strength (males) (Kg)	41.3 (6.3)
Average grip strength (females) (Kg)	22.8 (6.7)
Max grip strength (males) (Kg)	44.0 (6.0)
Max grip strength (females) (Kg)	25.8 (6.4)

## CONCLUSION

In this cohort, every day of LA/BR during acute COVID-19 illness was independently associated with subsequent lower grip strength of approximately 150 g. These results underscore the importance of early mobilization and discouraging bed rest in the acute phase of COVID-19. COVID-19 patients who are isolating should be encouraged to maintain physical activity as part of a modified isolation-friendly rehabilitation programme to mitigate the detrimental effects of physical deconditioning.

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